

CLAIMS:

1. A low-pressure mercury vapor discharge lamp comprising an at least partly substantially cylindrical discharge vessel with a length L_{dv} and with an internal diameter D_{in} ,
 - the discharge vessel enclosing, in a gastight manner, a discharge space provided with a inert gas mixture and with mercury,

5 - the discharge vessel comprising discharge means for maintaining a discharge in the discharge space,
 characterized in that the ratio of the weight of mercury m_{Hg} in the discharge vessel to the product of the internal diameter D_{in} and the length of the discharge vessel L_{dv} is given by the relation:

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$$\frac{m_{Hg}}{D_{in} \times L_{dv}} = C,$$

wherein $C \leq 0.01 \mu\text{g}/\text{mm}^2$.

2. A low-pressure mercury vapor discharge lamp as claimed in claim 1,
 characterized in that $0.0005 \leq C \leq 0.005 \mu\text{g}/\text{mm}^2$.

15 3. A low-pressure mercury vapor discharge lamp comprising an at least partly substantially cylindrical discharge vessel with a length L_{dv} and with an internal diameter D_{in} ,
 - the discharge vessel enclosing, in a gastight manner, a discharge space provided with a inert gas mixture and with mercury,

20 - the discharge vessel comprising discharge means for maintaining a discharge in the discharge space,
 characterized in that

- the product of the mercury pressure p_{Hg} and the internal diameter D_{in} of the discharge vessel is in a range of $0.13 \leq p_{Hg} \times D_{in} \leq 8 \text{ Pa.cm}$.

25 4. A low-pressure mercury vapor discharge lamp as claimed in claim 3,
 characterized in that the product of the mercury pressure p_{Hg} and the internal diameter D_{in} of the discharge vessel is in a range of $0.13 \leq p_{Hg} \times D_{in} \leq 4 \text{ Pa.cm}$.

5. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized in that the discharge vessel contains less than 0.1 mg mercury.

6. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized

- in that the discharge means comprises electrodes arranged in the discharge space,

- in that an electrode shield at least substantially surrounds at least one of the electrodes, and

- in that the electrode shield is made from a ceramic material or from stainless steel.

7. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized

- in that the means for maintaining an electric discharge are situated outside a discharge space surrounded by the discharge vessel, and

- in that said means comprise a coil provided with a winding of an electrical conductor, with a high-frequency voltage, for example having a frequency of approximately 3 MHz, being supplied to said coil in operation.

8. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized in that the product of the pressure of the inert gas mixture p_{igm} and the internal diameter D_{in} of the discharge vessel is in a range of $p_{\text{igm}} \times D_{\text{in}} \geq 5.2 \text{ Pa.m}$.

9. A low-pressure mercury vapor discharge lamp as claimed in claim 8, characterized in that $p_{\text{igm}} \times D_{\text{in}} \geq 8 \text{ Pa.m}$.

10. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized

- in that at least a portion of an inner wall of the discharge vessel is provided with a protective layer, and

- in that the protective layer comprises a material selected from the group formed by oxides of scandium, yttrium, and a further rare-earth metal, and/or a material

selected from the group formed by borates of an alkaline-earth metal, scandium, yttrium, and a further rare-earth metal, and/or a material selected from the group formed by phosphates of an alkaline-earth metal, scandium, yttrium, and a further rare-earth metal.

- 5 11. A low-pressure mercury vapor discharge lamp as claimed in claim 10, characterized in that the alkaline-earth metal is calcium, strontium, and/or barium.

12. A low-pressure mercury vapor discharge lamp as claimed in claim 10, characterized in that the further rare-earth metal is lanthanum, cerium, and/or gadolinium.

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13. A low-pressure mercury vapor discharge lamp as claimed in claim 10, characterized in that the oxide is yttrium oxide and/or gadolinium oxide.

14. A low-pressure mercury vapor discharge lamp as claimed in claim 10,
15 characterized in that the discharge vessel is made from a glass comprising silicon dioxide and sodium oxide, with a glass composition comprising the following essential constituents, given in percentages by weight (wt.%): 60-80 wt.% SiO_2 and 10-20 wt.% Na_2O .

15. A low-pressure mercury vapor discharge lamp as claimed in claim 14,
20 characterized in that the glass composition includes the following constituents: 70-75 wt.% SiO_2 , 15-18 wt.% Na_2O , and 0.25-2 wt.% K_2O .

16. A low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized in that the discharge vessel is made from a glass which is substantially free
25 of PbO and which comprises, expressed as a percentage by weight, the following constituents: 55-70 wt.% SiO_2 , <0.1 wt.% Al_2O_3 , 0.5-4 wt.% Li_2O , 0.5-3 wt.% Na_2O , 10-15 wt.% K_2O , 0-3 wt.% MgO , 0-4 wt.% CaO , 0.5-5 wt.% SrO , 7-10 wt.% BaO .

17. A low-pressure mercury vapor discharge lamp as claimed in claim 16,
30 characterized in that the composition of the discharge vessel comprises: 65-70 wt.% SiO_2 , 1.4-2.2 wt.% Li_2O , 1.5-2.5 wt.% Na_2O , 11-12.3 wt.% K_2O , 1.8-2.6 wt.% MgO , 2.5-5 wt.% CaO , 2-3.5 wt.% SrO , 8-9.5 wt.% BaO .

18. A low-pressure mercury vapor discharge lamp as claimed in claim 16, characterized in that the composition of the discharge vessel in addition comprises: 0.01–0.2 wt.% Fe_2O_3 and/or 0.01–0.2 wt.% CeO_2 and/or 0.01–0.15 wt.% SO_3 .
- 5 19. A low-pressure mercury vapor discharge lamp as claimed in claim 16, characterized in that the sum of the concentrations of Li_2O , Na_2O , and K_2O is in a range from 14 to 16 wt.% and/or the sum of the concentrations of SrO and BaO is in a range from 10 to 12.5 wt.%.
- 10 20. A compact fluorescent lamp comprising a low-pressure mercury vapor discharge lamp as claimed in claim 1, 2, 3, or 4, characterized in that a lamp housing is attached to the discharge vessel of the low-pressure mercury vapor discharge lamp, which lamp housing is provided with a lamp cap.